REMARKS

This Amendment and the following remarks are intended to fully respond to the Office Action dated April 5, 2005. In that Office Action, claims 1-7 and 20-26 were examined, and all claims were rejected. More specifically, claims 1-7 and 20-26 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Perlman (USPN 4,864,559).

In this Response, claims 1, 20, and 23 have been amended; new claims 30-39 have been added; and no claims have been canceled.

Claim Rejections – 35 U.S.C. § 102

Claims 1-7 and 20-26 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Perlman (USPN 4,864,559). Applicant respectfully traverses the Examiner's rejections under 35 U.S.C. § 102(b), on the grounds that Perlman does not anticipate the present invention because it does not disclose, explicitly or implicitly, each and every limitation of the pending claims. More specifically, Perlman does not disclose a specific partial view for each node as required by amended claims 1 and 20. Further, Perlman does not disclose a partial view comprising a subset of network nodes independent of hierarchical relationships as required by amended claims 1 and 20. In addition, Perlman does not disclose an application-based broadcast protocol using a gossip-based algorithm as required by claims 24 and 25.

As defined in the claims, embodiments of the present invention use a "partial view" to disseminate broadcast-type messages throughout a network. The partial view comprises a subset of the network nodes that is independent either of the partial views of other nodes or of hierarchical relationships with other nodes. Each node has a specific partial view; two nodes that are in each other's partial views may or may not share any other nodes in common. For example, if the partial view for node A contains nodes B, C, and D, the partial view for node B may or may not contain nodes C and D, as well as other nodes in the network. A new network node creates its partial view by sending a membership or subscription request to an existing node on the network. The existing member then determines whether to add the node to its partial view. The existing member then forwards the membership or subscription request to all of the nodes in its partial view. All receiving nodes then determine whether to add the new node to their respective partial views. Each node receiving the membership or subscription request may decide to deny the request. As a result, each node in the network will have a partial view that

may overlap only slightly or not at all with the partial views of those nodes in its own partial view.

In contrast, Perlman does not teach a partial view that is specific to each node. Rather, Perlman discloses a "group" that is defined as a closed set of nodes, each of which stores information for communicating with all other group members. For example, if node A communicates directly with nodes B, C, and D only, then node B must communicate directly with nodes A, C, and D, and no other nodes. Nodes A, B, C, and D thus form a "group." As far as can be understood from Perlman, there is *no* partial view stored locally within each node. Instead, there is merely a concept of a group, of which each node is a member. The group membership does not provide a specific view to any one member, but merely provides the other members of the group to each member.

Perlman uses Dijkstra's algorithm to calculate a spanning tree to route messages through each group. As the number of nodes in a group increases, the time that it takes to implement Dijkstra's algorithm increases at a rate faster than the number of nodes. For this reason, Perlman describes a two-level hierarchical network topology aimed at limiting the size of each group. Level-one nodes are those at the lowest level of hierarchy. Level-two nodes are those at the top of the hierarchy, which may act as either bottom-level or top-level nodes. Each group contains at least one level-two node that is a member of exactly two groups, one group of bottom-level nodes and the group of all top-level nodes. All of the level-one nodes descending from a given level-two node must be members of the same group. Thus, group membership depends on where a node is in the network hierarchy. Perlman cannot support a group of nodes that is independent of hierarchical relationships because this would require removing all hierarchy from the network, which would make the use of Dijkstra's algorithm prohibitively slow.

Under 35 U.S.C. § 102, a reference must show or describe each and every element claimed in order to anticipate the claims. *Verdegaal Bros. v. Union Oil Co. of California* 814 F.2d 628 (Fed. Cir. 1987) ("A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."). Perlman does not disclose a partial view that is specific to each node and is independent of hierarchical relationships. Instead, Perlman relies entirely on a fixed group and fixed hierarchical relationships depending on where a node lies in a two-tier network hierarchy. The fixed group prevents the nodes in Perlman from having different partial views of other network

elements. On the other hand, in the present invention, each node maintains a specific partial view that is determined without regard to hierarchical or group relationships.

Since Perlman does not disclose each and every element of the pending independent claims of the present invention, Perlman cannot, as a matter of law, anticipate claims 1 or 20 and Applicants respectfully request reconsideration of the pending rejection. Further, claims 2-7, 21-23, and new claims 30-39 depend directly or indirectly from these independent claims such that those claims should also be allowed over Perlman.

With respect to claim 24, it describes a network using a gossip-based algorithm to disseminate broadcast-type messages. Claim 25 describes a data structure for use in gossip-based communication between the nodes in a network. In a gossip-based algorithm, each node receiving a broadcast-type message forwards the message to a random subset of other nodes in the network. The larger the size of the subset, the higher the probability that the message will reach all nodes in the network. The present invention uses the creation of the partial view to randomize the subset of nodes to which a given node will forward broadcast-type messages. Each node receiving a broadcast-type message forwards the message to all nodes in its partial view. Any overlap in the partial views of different nodes allows for redundancy to increase the robustness of the system. If a node receives the same message from more than one source, it will forward only the first received message.

Perlman, on the other hand, teaches a method of applying Dijkstra's algorithm to create a spanning tree to disseminate broadcast-type messages. The method designates one node in each group as the root of the spanning tree. The root node forwards received messages to the other members of the group according to the spanning tree. Each message follows a discrete path through the system according to the spanning tree, which contains no redundancy.

Perlman does not disclose a network of nodes having the ability to communicate information between said nodes comprising an application-based broadcast protocol using a gossip-based algorithm. Rather, Perlman teaches the use of Dijkstra's algorithm to create a spanning tree to disseminate messages. Perlman's method is entirely different from the gossip-based approach described in the present application. Indeed, given the effectiveness of Perlman's use of Dijkstra's algorithm, there would be no reason to modify the teachings of Perlman to use a gossip-based approach, which relies on redundancy and has a margin for error. Consequently, Perlman does not disclose each and every element of claim 24 or 25, directly or

indirectly. As discussed, since Perlman does not disclose each and every element of independent claims 24 and 25, Perlman cannot, as a matter of law, anticipate these claims. Further, claim 26 depends directly from claim 25 such that it should also be allowed over Perlman, and reconsideration is respectfully requested.

Since the remarks above are believed to distinguish over the applied reference, any remaining arguments supporting the claim rejections are not acquiesced to because they are not addressed herein.

Conclusion

It is believed that no further fees are due with this Response. However, the Commissioner is hereby authorized to charge any deficiencies or credit any overpayment with respect to this patent application to deposit account number 13-2725.

In light of the above remarks and amendments, it is believed that the application is now in condition for allowance and such action is respectfully requested. Should any additional issues need to be resolved, the Examiner is requested to telephone the undersigned to attempt to resolve those issues.

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Respectfully submitted,

Timothy B. Scull, Reg. No. 42,137
Merchant & Gould P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903
(303) 357-1648